Source Water Assessment Program (SWAP) Report For The Academy at Swift River

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- Inventory land uses within the recharge areas of all public water supply sources;
- Assess the susceptibility of drinking water sources to contamination from these land uses; and
- Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the Massachusetts Department of Environmental Protection, Bureau of Resource Protection, Drinking Water Program

Date Prepared: February 12, 2002

Table 1: Public Water System (PWS) Information

PWS NAME	**The Academy at Swift River**
PWS Address	**151 South Street**
City/Town	**Cummington, Massachusetts**
PWS ID Number	**1069003**
Local Contact	**Dennis Mimitz**
Phone Number	**413-634-0307**

Well Name	*Source ID#*	*Zone I (in feet)*	*IWPA (in feet)*	*Source Susceptibility*
Well #1	1069003-01G	250	1240	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:
1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Academy at Swift River is a private, 14 month boarding school for students ranging in age from 13 to 18, located in the rural communities of Cummington and Plainfield. The facility is served by on-site septic disposal and a single water supply well #1 (01G). Well #1 is a 280-foot deep, 6-inch diameter, bedrock well. The Department approved well #1 in 1989, with a withdrawal rate of 26.25 gallons per minute; a maximum daily withdrawal of 37,800 gallons. However, actual water use at the school is significantly less that the approved withdrawal rate of the well. Therefore, the Department reduced the Zone I to 250 feet based on actual water use (10,000 gpd); the IWPA remains at the 1,240 based on the approved withdrawal rate of the well (37,800 gpd). The Zone I is the protected area immediately surrounding the wellhead while the IWPA provides an interim protection area for a water supply well when the actual recharge area has not

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA.

The lodge, now a science classroom building, is located just outside of the Zone I at a distance of approximately 270 feet from the well. The school utilizes micro-pipette techniques and frozen biological specimens but does not have a tight tank for the laboratory wastewater discharge. Please note that the Title 5 regulations prohibit discharge of non-sanitary wastewater to a septic system. The facility uses propane for a heating fuel source. Although the main supply tank is north of the main building, other smaller tanks are located at remote buildings.

USGS maps the bedrock within the area as meta-sedimentary and meta-volcanic rocks with complex folding, resulting in steeply dipping, nearly vertical beds. Immediately at the well site the rock is mapped as quartzite schist of the Goshen Formation. The overburden is a relatively thin layer of till. There is no record of a confining, protective clay layer in the vicinity of the well. Wells located in these geological conditions are considered to have a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration from the surface.

The well serving the facility has no treatment at this time. For current information on water quality monitoring results, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Please refer to the attached map of the Zone I and IWPA and Table 1 for additional information regarding the location of the well and activities within the protection areas.

2. Discussion of Land Uses in the Protection Areas

There are few activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Non-conforming activities in Zone I;**
2. **School facilities.**

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Contaminant Sources	Zone I	IWPA	Threat	Comments
School facilities	No	Yes	Moderate	School facilities within IWPA; household hazardous materials and waste
Septic System	No	Yes	Moderate	See Septic System Brochure
Laboratory waste to septic	No	No	Moderate	Contact Program Coordinator – Wastewater Program
Residential Use	No	Yes	Moderate	See Best Management Practices
Parking lots and transportation corridor	No	Yes	Moderate	Limit road salt usage and maintain drainage away from wells

*** -For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.**

The overall ranking of susceptibility to contamination for wells 2 and 3 is moderate, based on the presence of one or more moderate ranking land uses or activities in the Zone I and IWPA, as seen in Table 2.

1. Non-conforming activities in Zone I; – The lodge, classroom building is located just outside of the Zone I of the well. The only activities within the Zone I are related to passive recreation and foot traffic through campus. The main foot pathway from the north buildings to the lodge/classroom building which has been in place for approximately 12 years was paved in 2001 to control erosion; there is no motor vehicle traffic on the pathway. It was also noted during the site visit that the well cap did not have a sanitary, watertight cap. DEP prohibits all activities not related directly to water supply within Zone I. Please note that systems not meeting DEP Zone I requirements must receive DEP approval and address Zone I issues prior to increasing water use, modifying systems or conducting any activities within Zone I.

Recommendations:

- ✓ Prohibit any new non-water supply activities within the Zone I.
- ✓ Supply a watertight sanitary cap for the well.
- ✓ Do not use pesticides or fertilizers within the Zone I. Minimize sodium-based deicers within the Zone I.

2. School facilities – All of the school facilities are locate within the IWPA of the well except the septic system leach field. The leach field is located outside of the IWPA and appears to be topographically cross gradient from the well site. The most significant threats from a septic system are from lack of maintenance and improper disposal of non-sanitary waste. The school should evaluate how laboratory wastes are treated and disposed; a tight tank may be required.

Recommendations:

- ✓ Use Best Management Practices for all activities at the school with respect to household hazardous materials and education of staff regarding septic system management.
- ✓ Contact Paul Nietupski, at 413-755-2218 the wastewater management program coordinator, regarding the laboratory wastewater management.
- ✓ Storage of hazardous materials (even household type hazardous materials) should be an impermeable surface and contained in an area large enough to hold 110% of the liquid volume, should a spill occur.
- ✓ Review the facility's status with respect to registration as a Very Small Quantity Generator of Hazardous Waste. Whether you are required to register or not, please implement standard operating procedures regarding proper storage, use and disposal of hazardous hazardous materials. To learn more, refer to for the Requirements for Small Quantity Generators.

Another potential threat to the well within the IWPA noted during the site visit was the old shallow dug well near the main building. The dug well was partially covered at the time of the visit and the Department recommended decommissioning the well to prevent potential contamination of the shallow aquifer and to eliminate the physical hazard. The school is commended for having filled and properly decommissioning the well following the SWAP site visit.

Catch basins transport storm water from the roadway and adjacent properties to the ground. As flowing storm water travels, it picks up debris and contaminants from streets, parking areas and lawns. Common potential contaminants include lawn chemicals, pet waste, leakage from dumpsters,

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

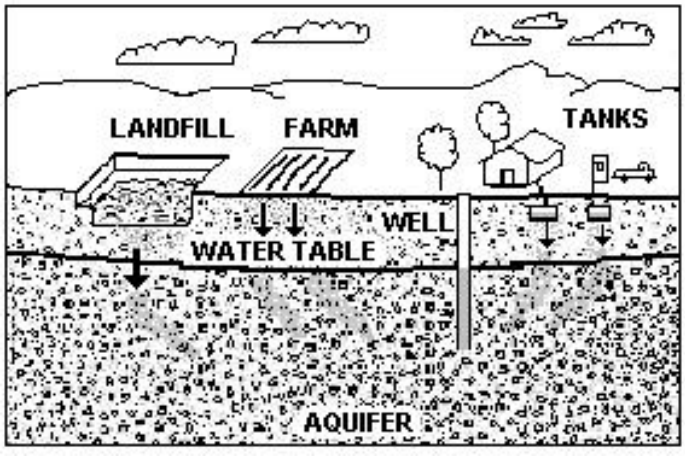

Figure 1: Example of how a well could become contaminated by different land uses and activities.

household hazardous waste, and contaminants from vehicle leaks, maintenance, washing or accidents. The drains are directed topographically downgradient of the well to an area on the edge of the IWPA. Monitor parking areas and inspect, maintain, and clean catch basins on a regular schedule. Please not that material cleaned out of catch basins is considered solid waste and must be disposed of in compliance with DEP policy. Residential uses also pose minimal threat to public and private water supplies provided septic systems and household hazardous materials are properly managed.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Swift River Academy water supply well is fairly well protected and the school is commended for conducting on-going protection measures. Please review and adopt the key recommendations above and the following to further protect the source:

Priority Recommendations:

- Install a sanitary cap on the wellhead.
- Comply with non-sanitary wastewater disposal requirements.

Zone I:

- Keep any new non-water supply activities out of the Zone I.
- Continue to prohibit public access to the well and pumphouse by locking facilities, sealing all openings in the walls and posting signs.
- Conduct regular inspections of the Zone I. Look for illegal dumping, evidence of vandalism, check any above ground tanks for leaks, etc.
- Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- Maintain drinking water protection area signs at key visibility locations away from the well at the perimeter of protection areas.
- Incorporate groundwater education into school curriculum (contact DEP for copies of appropriate curricula as required).

Facilities Management:

- The Academy at Swift River is not a registered Very Small Quantity Generator of Hazardous Waste. Review your status and determine compliance if required. Whether registration is required or not, implement standard operating procedures regarding proper storage, use and disposal of hazardous materials. To learn more, refer to attachments and http://www.state.ma.us/dep/consumer/consumer.htm regarding management of household hazardous materials.
- Eliminate non-sanitary wastewater discharges to on-site septic systems. Instead, in areas using hazardous materials such as science labs, discharge drains to a tight tank.
- Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides on facility property.
- Septic system components should be located, inspected, and maintained on a regular basis.
- Protective pads around the wellhead should slope away from well casing.

Planning:

- Work with local officials in Cummington and Plainfield to include the school's IWPA in Aquifer Protection District Bylaws and to assist you in improving protection.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

For More Information:

Contact Catherine Skiba in DEP's Western Region Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at: www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier, town boards, and the local media.

- Supply residential neighbors with assistance and information regarding proper management of household hazardous materials management.
- Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note: each program year the Department posts a new Request for Response for the Grant program (RFR). On or about May 1 the new RFR is available and the application is due back on or about June 31. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Pesticide Use Fact Sheet
- Requirements for Small Quantity Generators of Hazardous Waste
- Healthy Schools Fact Sheet
- Wellhead Protection Grant Program Fact Sheet
- Residents Protect Drinking Water Fact Sheet

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